Pediatric Exanthems

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Objectives

- Develop a logical approach to the evaluaion of exanthems in a child
- Identify common causes of pediatric exanthems
- Understand treatment of common pediatric exanthems

History

- Detailed history
  - Recent travel
  - Woodland exposure
  - Drug ingestion
  - Ill contacts
  - Medical history

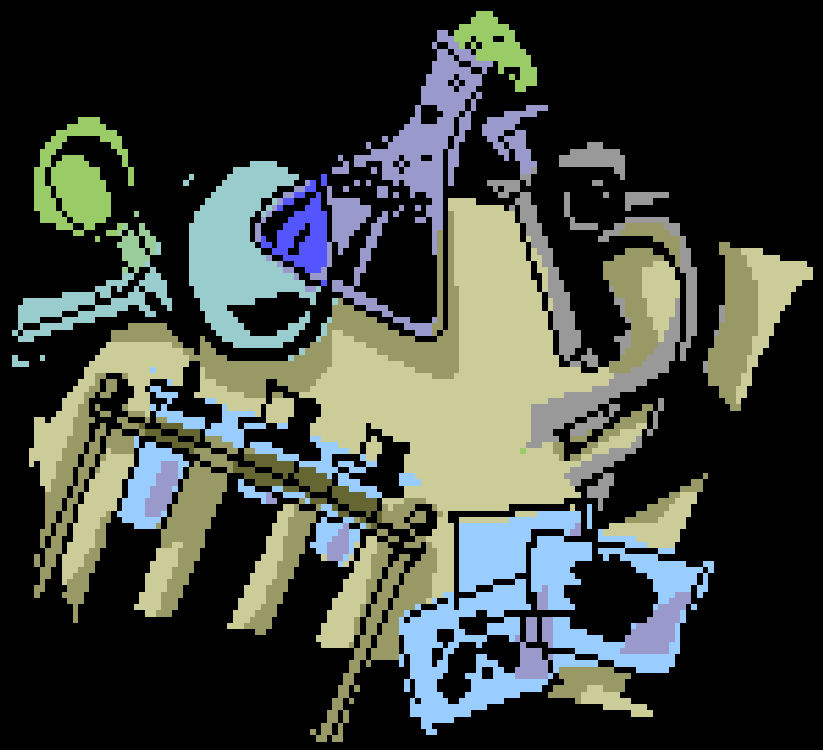
History

- Rash details
  - Site of onset
  - Rate, direction of spread
  - Pruritis
  - Temporal relationship of rash and fever
  - Oral or topical therapies

Physical Examination

- Identify primary lesion and presence of secondary lesions
- Thorough examination essential to accurate diagnosis

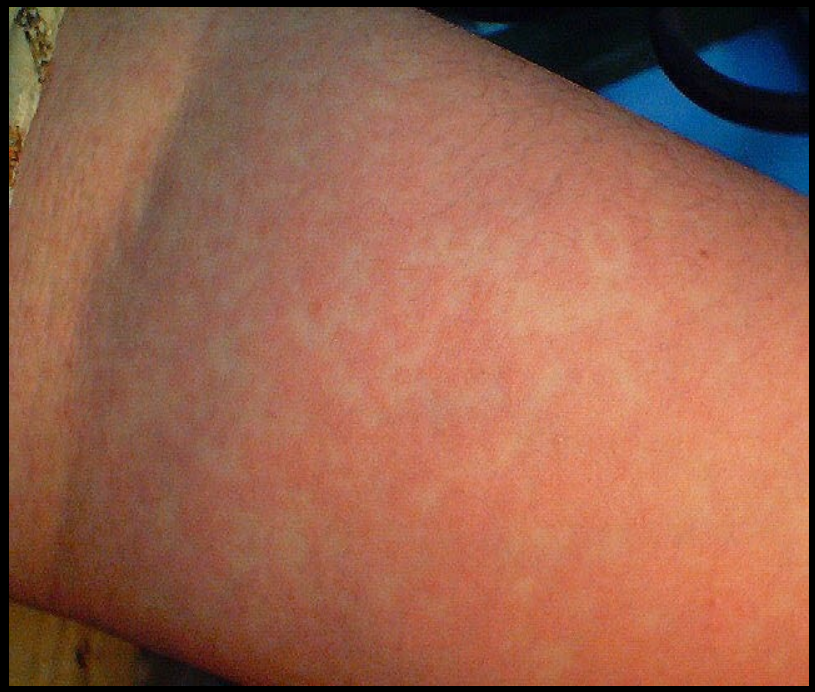
Laboratory Data



- Availability dependent
- As clinically appropriate
- Serologic tests not often helpful in acute setting
- Aspirates, scrpaings and pustular fluid may be obtained

Rubella (German measles)

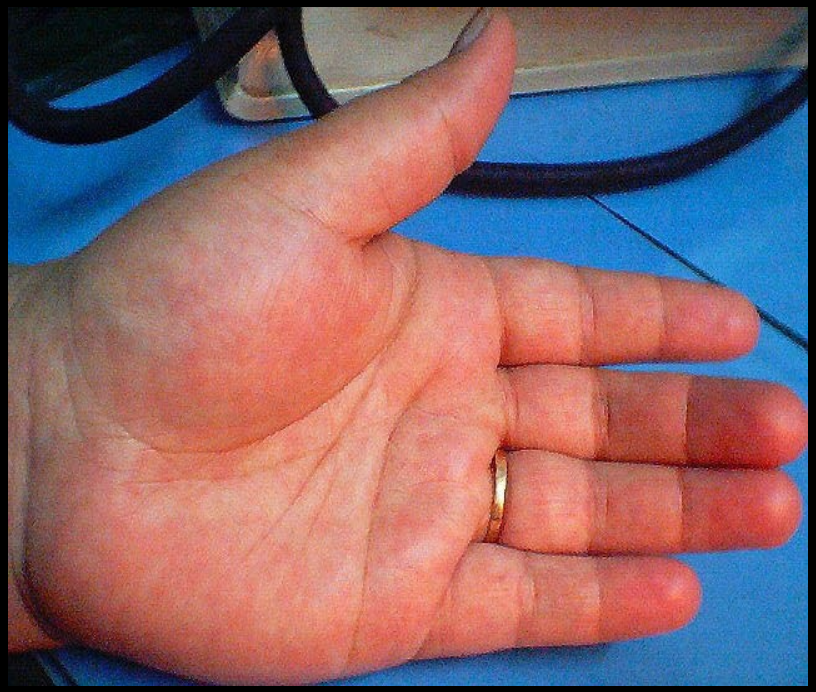
- Etiology: Enveloped RNA Togavirus
- Transmission via direct contact, less commonly air droplets
- Incubation period: 14 days



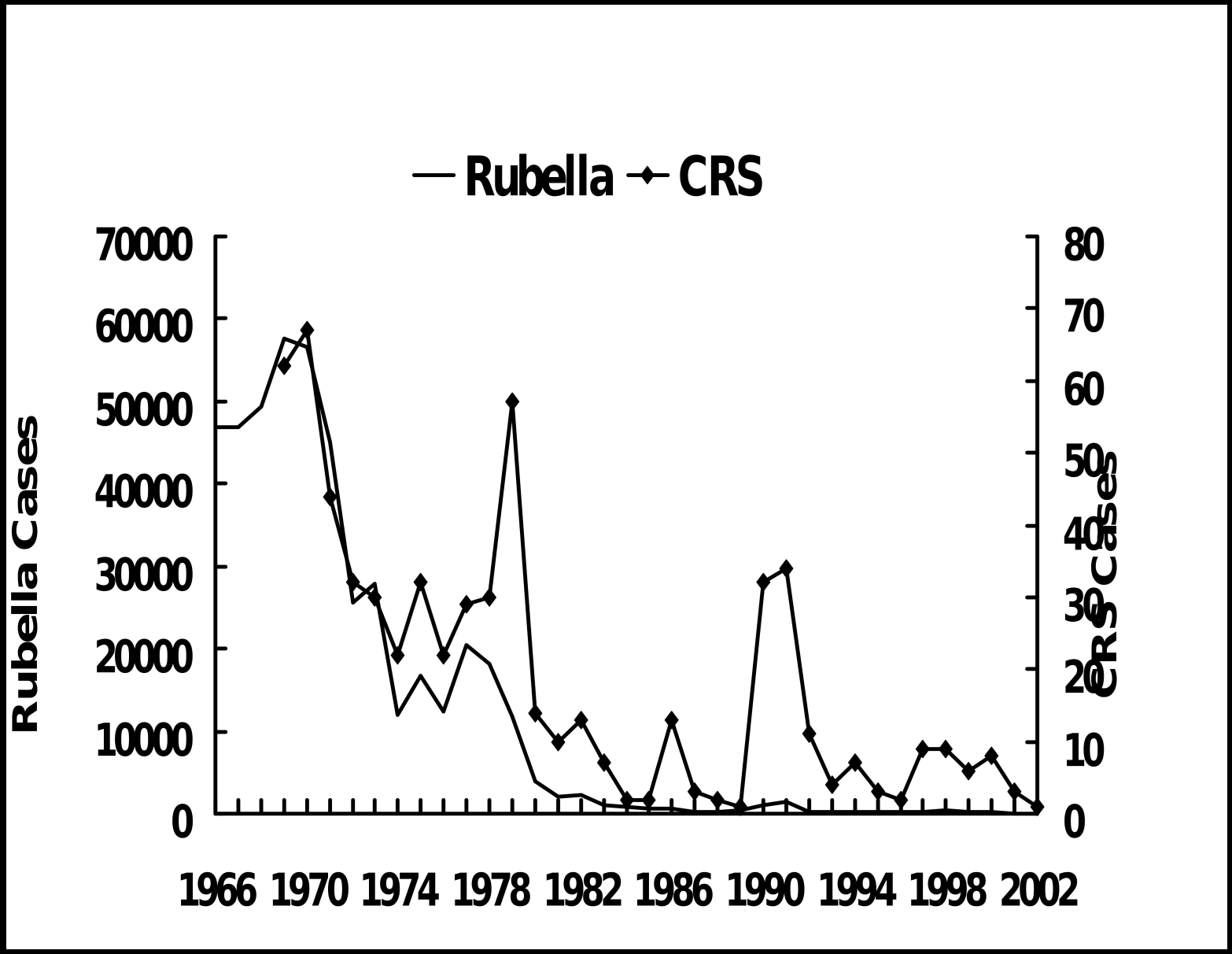
Rubella (German measles)

- Transplacental transmission during viremia
- Pre-vaccine 90% acquired prior to age 15
- Late winter – early spring

Rubella (German measles)



- Vaccine
  - Developed 1969
  - Live attenuated (CDC)
- Incidence
  - < 15 yrs: 0.06 per 100,000
  - 15-44 yrs: 0.24 per 100,000


Rubella
CRS
Rubella Cases
CRS Cases
70000
60000
50000
40000
30000
20000
10000
0
80
70
60
50
40
30
20
10
0
1966
1970
1974
1978
1982
1986
1990
1994
1998
2002

cdc.gov

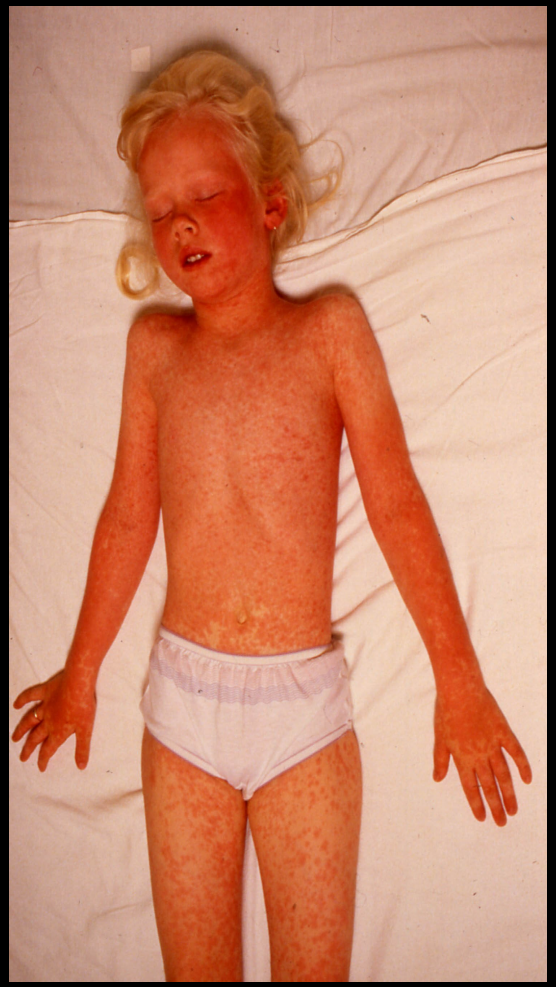
Rubella (German measles)

- Presentation
  - Prodrome uncommon in children
  - Pink macules/papules begin on forehead spread inferiorly and to extremities within 1 day
  - Fading in reverse order by 3rd day
  - Forschheimer's spots – petechiae on soft palate

Rubella (German measles)

- Treatment:
  - Supportive

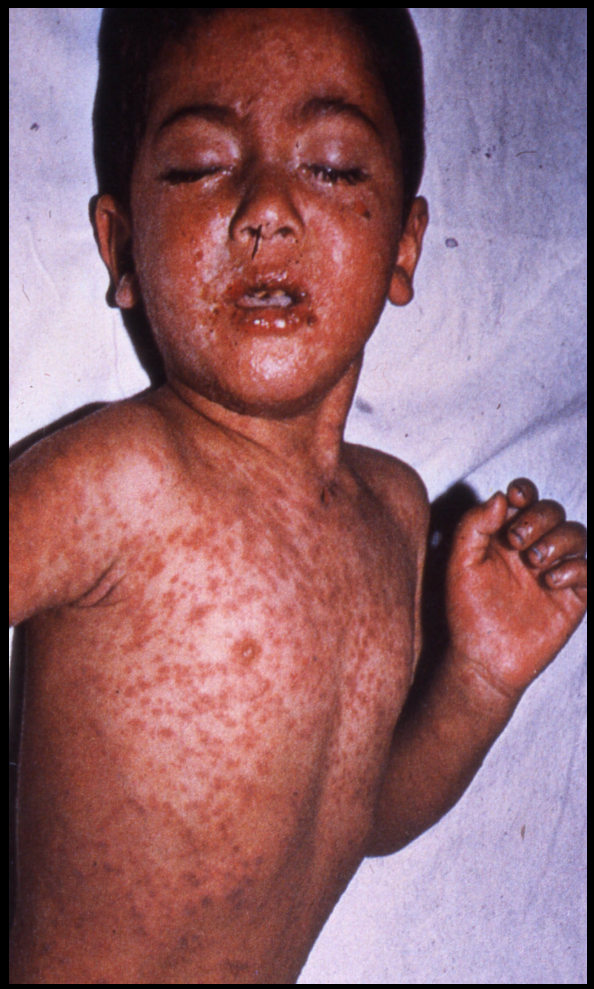
Rubeola (measles)

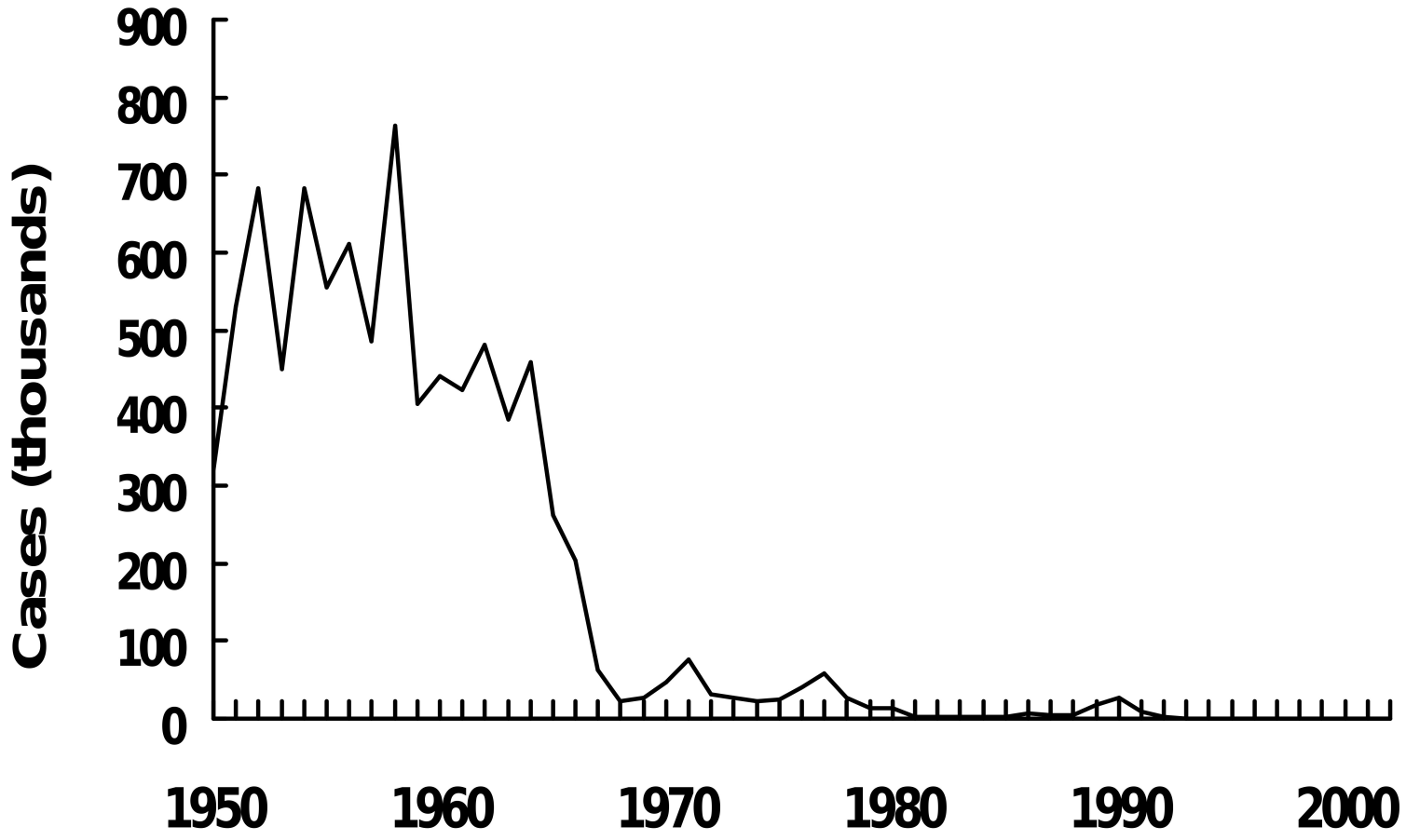


- Paramyxovirus family
- Prevaccine incidence similar to Rubella
- Transmission via direct contact
- Incubation period: 10-12 days
- Late winter – early spring

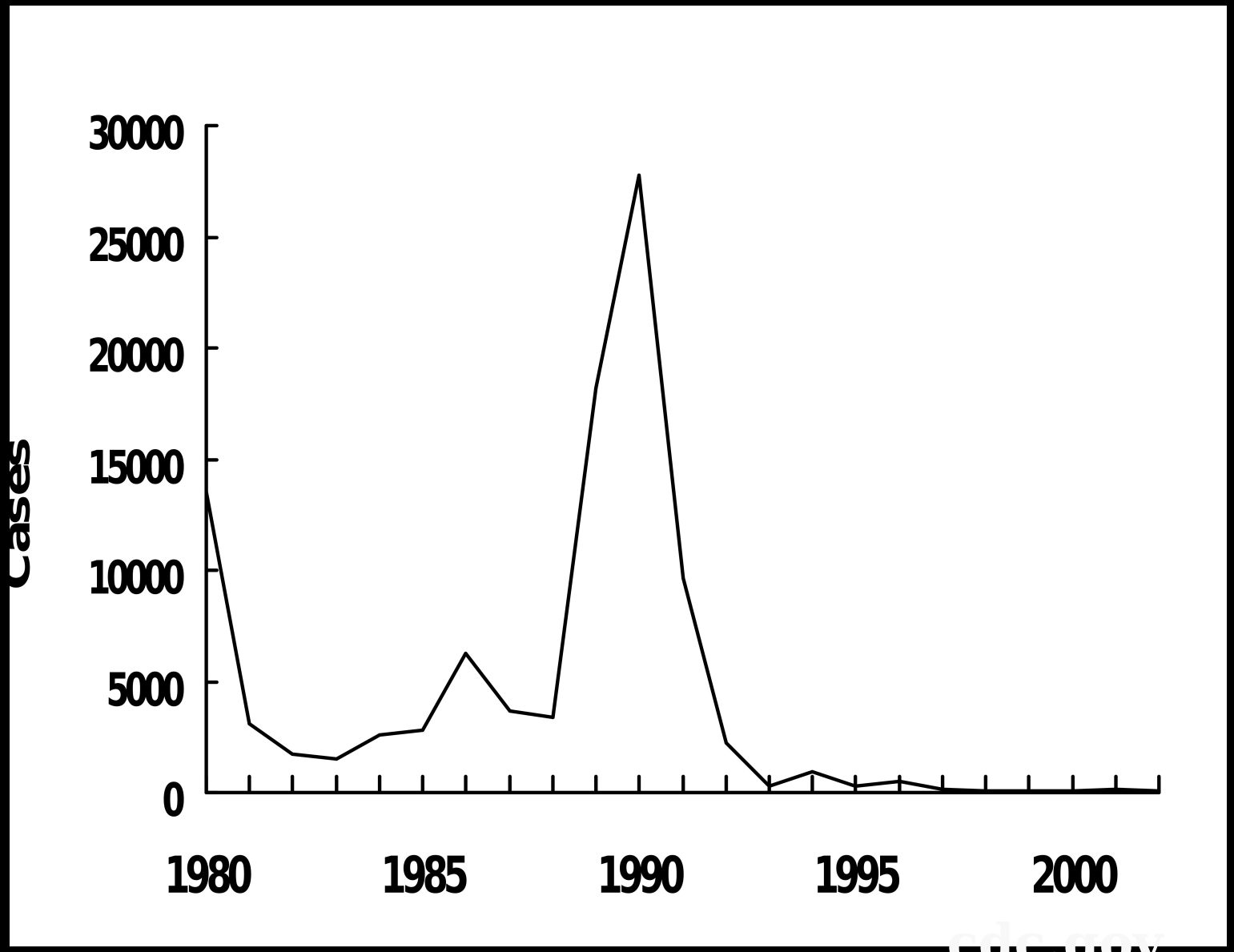
Rubeola (measles)

- Vaccine
  - Develop 1963
  - Live atenuated (CDC)
  - Current vaccine 95% effective, lifelong immunity
- Incidence
  - < 0.5 cases per 1,000,000 in 1999




Cases (thousands)
900
800
700
600
500
400
300
200
100
0
1950
1960
1970
1980
1990
2000

cdc.gov


30000
25000
20000
15000
10000
5000
0
Cases
1980
1985
1990
1995
2000
cdc.gov

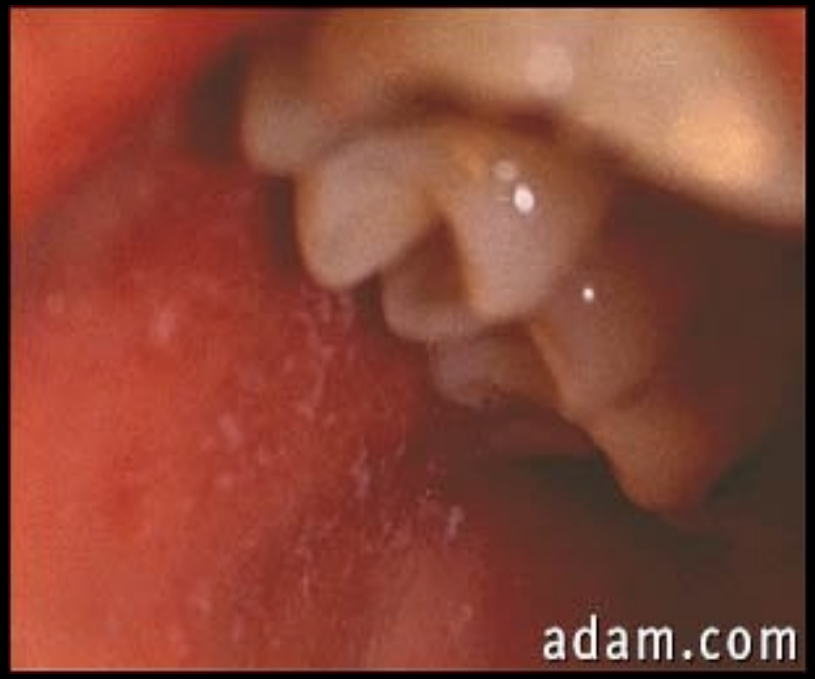
Measles Resurgence – United States, 1989-1991

- Cases 55,622
- Age group affected Children <5 yrs
- Hospitalizations >11,000
- Deaths 123
- Direct medical costs >$150 million

Rubeola (measles)

- Presentation
  - Prodrome of high fever, malaise, anorexia followed by URI symptoms; triad of cough, coryza and conjunctivitis
  - Appearrance of macular-papular (confluent) rash on or about 4th febrile day
  - Rash first of face/neck spreads centrifugally and inferiorly; fades in 4-6 days

Rubeola (measles)



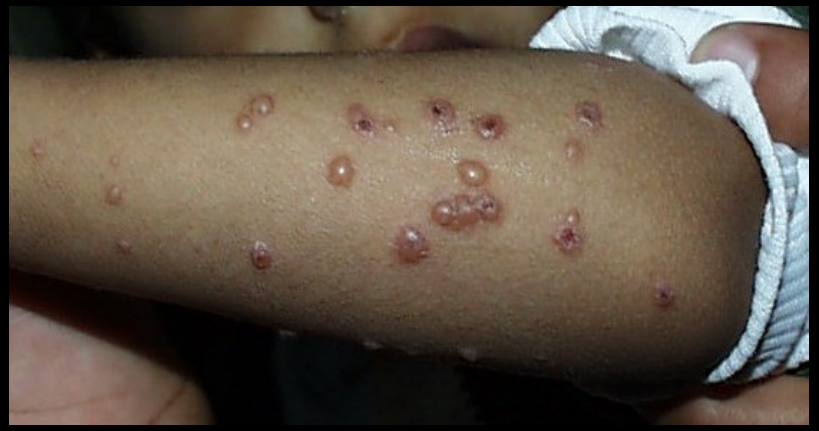
Koplick spots pathognomonic

Rubeola (measles)

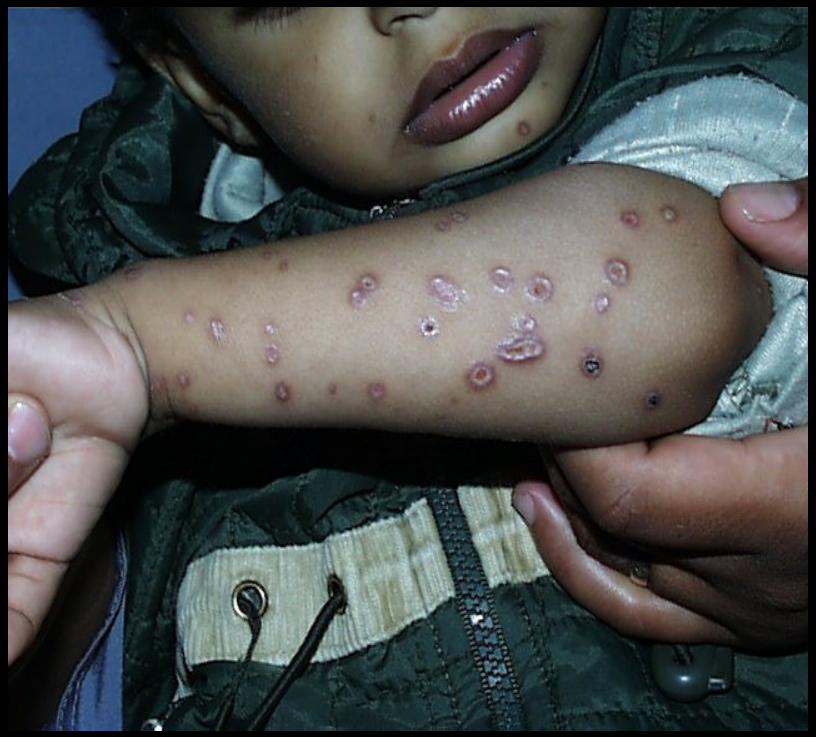
- Treatment:
  - Primarily supportive
  - IgG, Ribavarin and Vitamin A may have some utility

Varicella (Chicken pox)

- Varicella-zoster virus: member of herpes virus family, double stranded DNA viruses
- Transmission thru direct contact with respiratory secretions or lesion fluid or airborne spread
- Transplacental transmission
- Incubation period: 10-21 days



Varicella (Chicken pox)



- Epidemiology:
  - 90% of cases in children < 10yrs
  - 5% in individuals > 15 yrs
- Treatment:
  - Supportive
  - Antivirals may have role in more significant disease

Varicella Clinical Features

- Incubation period 14-16 days (range 10-21 days)
- Mild prodrome for 1-2 days
- Generally appear first on head; most concentrated on trunk
- Successive crops (2-4 days) of pruritic vesicles

Congenital Varicella Syndrome

- Results from maternal infection during pregnancy
- Period of risk may extend through first 20 weeks of pregnancy
- Atrophy of extremity with skin scarring, low birth weight, eye and neurologic abnormalities
- Risk appears to be small (<2%)

Varicella Vaccine

- **Composition** — **Live virus (Oka-Merck strain)**
- **Efficacy** — **95% (Range, 65%-100%)**
- **Duration of Immunity** — **>7 years**
- **Schedule** — **1 Dose (<13 years of age)**

  May be administered simultaneously with measles-mumps-rubella (MMR) vaccine

Breakthrough Infection

- Retrospective cohort study of 115,000 children vaccinated in 2 HMOs during January 1995 through December 1999
- Risk of breakthrough varicella 2.5 times higher if varicella vaccine administered <30 days following MMR
- No increased risk if varicella vaccine given simultaneously or >30 days after MMR

MMWR 2001;50(47):1058-61

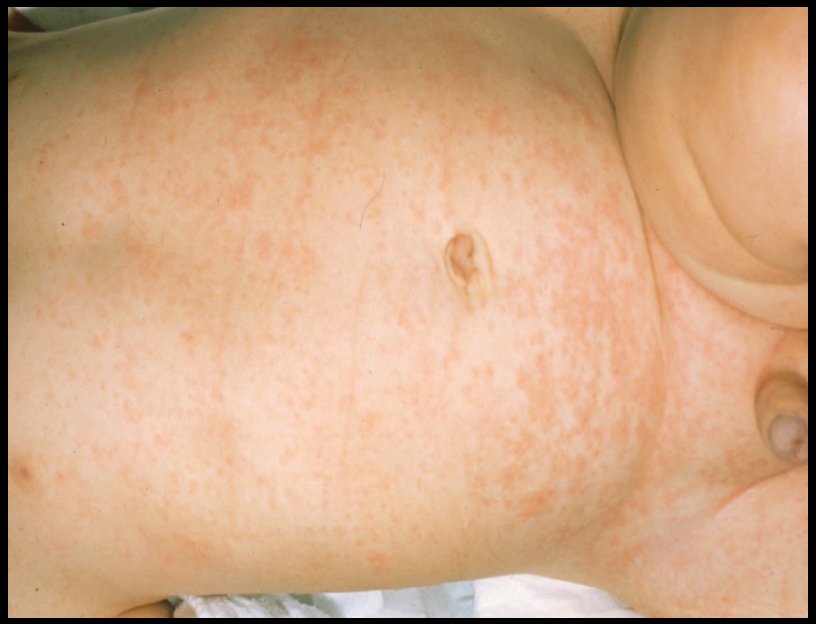
Varicella Vaccine Recommendations Adolescents and Adults

- Persons ≥13 years of age without history of varicella
- Two doses separated by 4 - 8 weeks
- Up to 90% of adults immune
- Serologic testing may be cost effective

Varicella Vaccine Postexposure Prophylaxis

- Varicella vaccine is recommended for use in susceptible person after exposure to varicella
  - 70%–100% effective if given within 72 hours of exposure
  - not effective if >5 days but will produce immunity if not infected

Roseola



- Aliases: exanthem subitum, roseola subitum, roseola infantalis, and sixth disease
- Etiology: Human herpes virus 6 or 7, double stranded DNA virus

Roseola

- Common worldwide
- Self-limited benign disease
- HHV-6B primary causal agent, HHV-7 produces similar syndrome in 24-36 month olds
- Epidemiology: 6 mos to 3 yrs

Roseola

- Presentation:
  - Sudden onset of fever lasting 1-8 days, average of 4 days (as high as 40.0 C)
  - Mild irritability and lethargy despite fevers
  - Exam may reveal cervical adenopathy (posterior cerv & occipital), tonsillar, pharygeal and TM erythema
  - 1/3 with diarrhea & vomitting

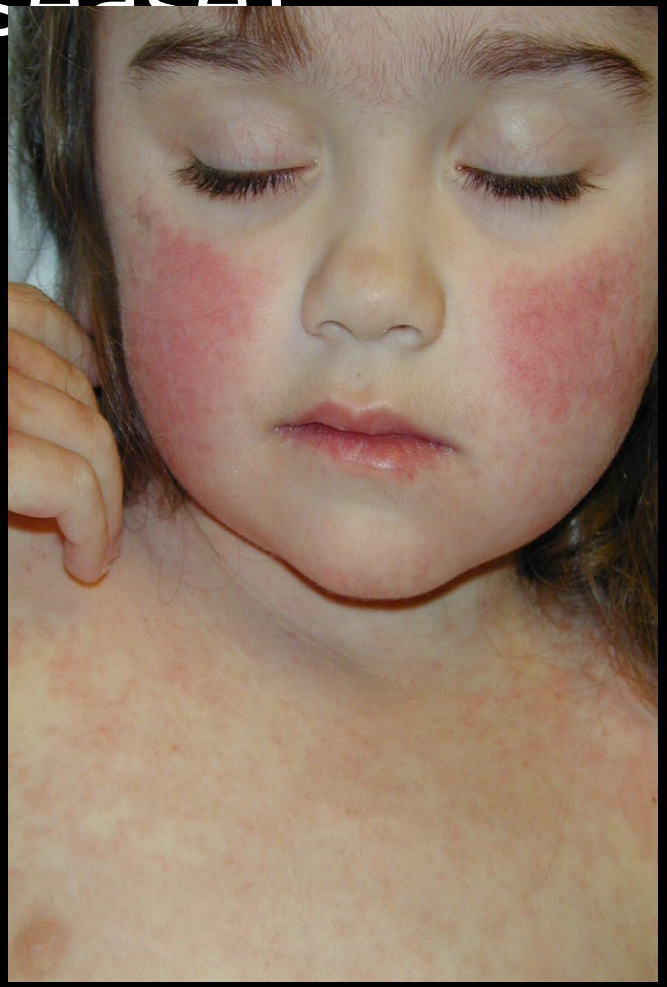
Roseola

- Presentation:
  - Rash appears 2-3 days following fever
  - Diffuse maculopapular eruption usually sparing face, no coelescing
  - Rash resolves 1-3 days

Erythema infectiosum (fifth disease)

- Etiology:
  - Human Parvovirus B19
  - Smallest human DNA virus (single strand of DNA)
- Transmission
  - Respiratory secretions
  - Blood product exposure
  - Transplacental
  - Most infectious prior to exanthem

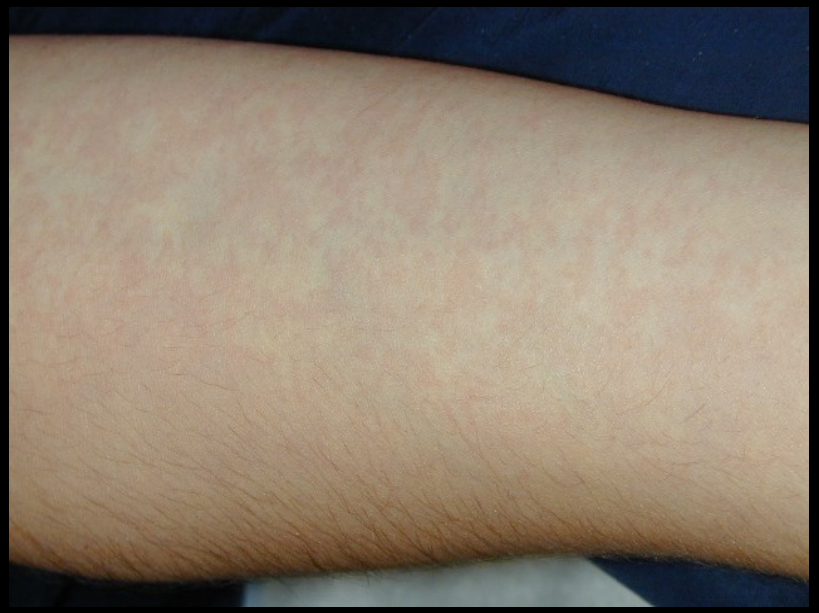
Erythema infectiosum (fifth disease)



- Incubation period: 4-14 days
- Epidemics amongst school age children
- Primarily children between 3 to 15 years of age

Erythema infectiosum (fifth disease)

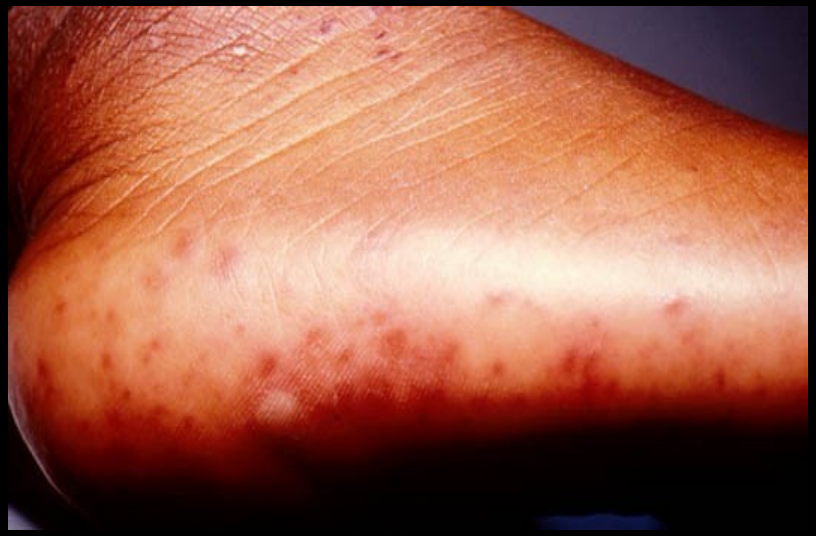
- Presentation:
  - Mild prodrome (headache, coryza, malaise) for 2-3 days prior to rash. Arthralgias, arthritis in about 10%.
  - Fiery red macular rash “slapped cheeks” giving way to generalized lacy-reticular rash.
  - Rash typically resolves in 5-10 days although may wax & wane for weeks or months.



Erythema infectiosum (fifth disease)

- Treatment is supportive
- Vaccine is being developed but not available yet

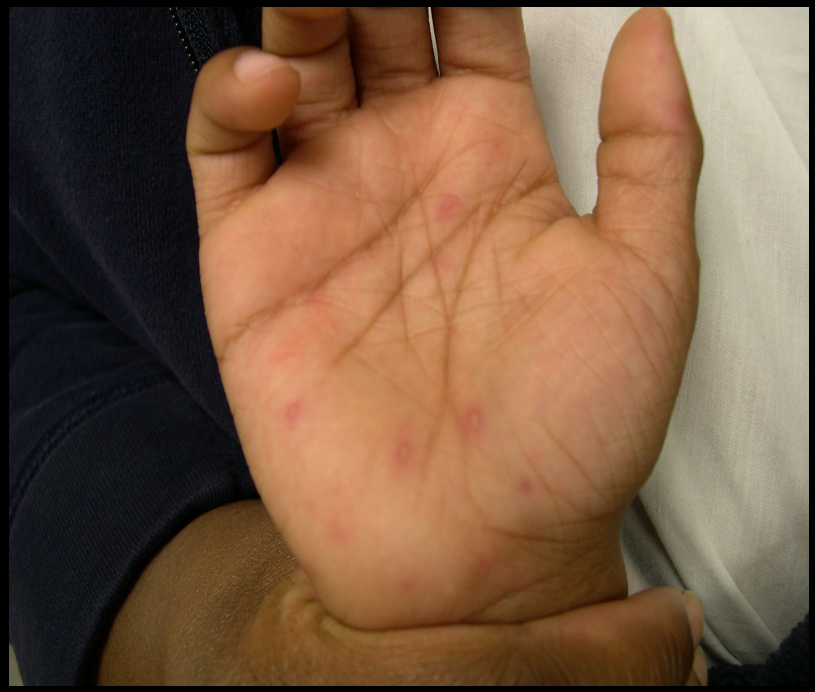
Hand, Foot and Mouth Disease



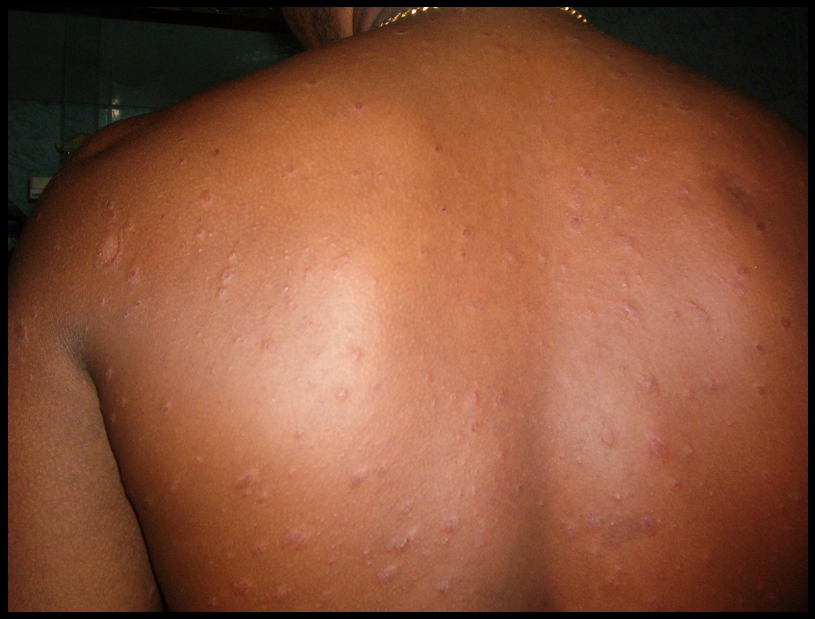
- Etiology:
  - Coxsackie A & B
  - Self-limited non-polio enterovirus
  - Highly contagious, aerosol spread
  - Bi-modal: spring and summer
  - Children < 5 yrs

Hand, Foot and Mouth Disease

- Incubation: 4 days
- Malaise, fever, lymphadenopathy
- Oral vesicles of palate, tongue, buccal mucosa (spare gingiva) rapidly ulcerate
- Subsequent mac-pap lesions on hands & feet progress to vesicles, ulcerate then crust
- Supportive care, self-limited within 2 weeks



Honorable mention



- Pityriasis rosea
  - Etiology unknown
  - Herald patch
  - About 5% with mild prodrome
  - Ages 10-35
  - +/- pruritis
  - Generally resolves in 2-6 weeks; may persist for months

Recommended Childhood and Adolescent Immunization Schedule — United States, January – June 2004

Range of Recommended Ages | Catch-up Immunization | Preadolescent Assessment

Vaccine ▼ / Age ▶	Birth	1 mo	2 mo	4 mo	6 mo	12 mo	15 mo	18 mo	24 mo	4-6 y	11-12 y	13-18 y
Hepatitis B[1]	HepB #1	only if mother HBsAg (-)							HepB series			
		HepB #2			HepB #3							
Diphtheria, Tetanus, Pertussis[2]			DTaP	DTaP	DTaP		DTaP			DTaP	Td	Td
Haemophilus influenzae Type b[3]			Hib	Hib	Hib[3]	Hib						
Inactivated Poliovirus			IPV	IPV	IPV					IPV		
Measles, Mumps, Rubella[4]						MMR #1				MMR #2	MMR #2	
Varicella[5]						Varicella			Varicella			
Pneumococcal[6]			PCV	PCV	PCV	PCV			PCV		PPV	
Vaccines below this line are for selected populations												
Hepatitis A[7]									Hepatitis A series			
Influenza[8]					Influenza (yearly)							

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2003, for children through age 18 years. Any dose not given at the recommended age should be given at any subsequent visit when indicated and feasible. ▨ Indicates age groups that warrant special effort to administer those vaccines not previously given. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturers' package inserts for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form can be found on the Internet: http://www.vaers.org/ or by calling 1-800-822-7967.